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The Economic Effects of Minimum Import Prices

(With an Application to Uruguay)

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and
Patrick Messerlin

By imposing floor prices on imports, the procedures for reference and minimum export prices jeopardize trade liberalization efforts by creating the impression that tariff cuts are greater than they are. Reference prices add to the distortions created by a pure tariff system, by distorting relative domestic prices — by promoting the domestic consumption of higher-quality goods and the domestic production of lower-quality goods.

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This paper — a product of the Trade Policy Division, Country Economics Department — is part of a larger effort in the department to monitor and improve the effectiveness of trade policy reforms. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Ballantyne, room N10-039, extension 37947 (May 1992, 23 pages).

By increasing the cost of imports, minimum unit import reference prices not only generate the usual distortions one expects from tariff protection but add new ones that a pure tariff system would not generate.

Reference prices substantially reduce the price gap between imports with prices above and below the reference price. By making "cheap" imports relatively more expensive than "expensive" imports, reference prices affect quality in three ways that appear not to have been analyzed before:

- They can induce foreign firms to shift toward more expensive exports to the country with reference prices.

- They can induce domestic producers in that country to shift production toward lower-quality, cheaper goods.

- Because this decreases the *relative* price of the expensive varieties, domestic consumers may lean toward buying more expensive goods.

In other words, this system of administered protection distorts domestic consumption and production.

Using the case of Uruguay, Changanaquí and Messerlin estimate what protection the reference price procedures provide for Uruguayan industries and analyze how this protection affects Uruguay's economy.

They show that the reference and minimum export price procedures impose floor prices on imports that cover more than a third of value added in Uruguayan manufacturing. The minimum export price system boosts published tariff rates for covered goods by 7 percent (probably an underestimate) and the reference system boosts them 18 percent.

These systems jeopardize trade liberalization efforts by creating the impression that tariff cuts are greater than they really are. These systems also create massive distortions (from 15 to 30 percent) between the relative domestic prices of imported goods above and below the floor prices.

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The Economic Effects of Minimum Import Prices with an Application to Uruguay [1]

by
Federico Changanaquí
and
Patrick A. Messerlin

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1. Introduction

Many developing countries increase the extent of protection granted to domestic industries by imposing tariffs based on minimum unit import reference prices rather than the stated c.i.f. import transaction invoice prices. Reference prices are often used to counter the underinvoicing of imports that is generally triggered by other existing protectionist measures in high-protection countries, as for instance in Perú and Cote d'Ivoire in the mid-80s. Reference prices also form part of trade liberalization programs, as an instrument aimed at reducing shocks associated with the opening of an economy, as for instance during the Mexican trade liberalization[2] in 1985. Finally, reference prices are also used as a substitute for anti-dumping measures, as for instance in Uruguay since 1981.

The economic costs of reference prices, however, have not been extensively analyzed. These economic costs can be decomposed into two main components. First, reference prices magnify the tariff protection against imports whose prices are lower than the corresponding reference prices. This price augmentation effect generates the usual distortions analyzed in traditional trade theory. Second, for each product, reference prices substantially reduce the price differentials between the varieties of imports with prices lower and higher than the reference price. By making the cheap imported variety relatively more expensive than the expensive variety, reference prices introduce a distortion that is likely to have adverse quality effects, a phenomenon we believe has not been analyzed in the trade literature. In this respect, it is intuitively clear that reference price procedures have three quality-related effects: 1) they can induce foreign firms to shift exports to the country toward the expensive varieties; 2) they can induce domestic producers to shift production toward the cheap varieties; and 3) because these procedures decrease the *relative* price of the expensive varieties, they can induce domestic consumers to reallocate expenditures toward expensive goods. Hence, this system of administered protection has negative distributional effects on the consumption side and also promotes the domestic production of low-quality domestic goods.

The purpose of the present study is to analyze the economic effects of reference prices, using the Uruguayan case as an example. The study also presents estimates of the protection provided for Uruguayan industries by the reference price procedures and analyzes the impact of this protection on the Uruguayan economy. This study is organized as follows. Section 2 presents a theoretical discussion of the resource and welfare consequences of reference prices. After providing the necessary definitions for reference prices, this section is divided in two parts. First, it takes the simplest possible approach by

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[2]At the beginning of the Mexican trade liberalization in 1985, following the elimination of most quantitative restrictions, the percentage coverage of production of tradables under reference prices increased from 18 percent to 25 percent, and remained at this level until they were completely eliminated in 1987.

assuming that consumers are interested in the goods themselves and not in the services provided by these goods. This allows us to suggest some elements for analyzing the impact of administered protection on the structure of exports and on domestic production. Then we go a step further by assuming that consumers are interested in the services provided by the goods, that is, they take into account the quality of the goods imported or produced domestically. This extension allows us to compare the impact of administered protection on the quality of imports and on incentives to alter the product mix with the impact of other instruments of protection. Section 3 describes the coverage of the administered protection by reference prices in Uruguay. It also provides empirical estimates of the main effects of reference price procedures in Uruguay. In addition it shows that these empirical results are robust by examining in greater detail the Uruguayan textiles sector and Uruguay's trade with Brazil and Argentina, the country's two major trading partners. Finally, Section 4 presents the conclusions.

2. Theoretical Discussion of the Resource and Welfare Consequences of Minimum Prices

2.1 Definitions[3] and background. In general, a mechanism of reference prices works in the following way: when the declared c.i.f. import price is less than the reference price (a floor price fixed by regulation), the official duty is applied to the reference price. For transactions with a unit price higher than the official floor price, the published tariff rate is applied to the declared shipment, so the apparent (or published) and true (or actually paid) tariffs are the same. Thus, remedial measures are imposed only on import shipments with a unit price lower than the official floor price.

The reference price mechanism is summarized by the following formula:

$$[1] \qquad P = p + tF,$$

where P is the final domestic price after imposition of the tariff to the corresponding reference price, p is the c.i.f. import price declared by the importer, t is the nominal tariff rate, and F is the reference price that the Uruguayan authorities consider to be the floor import price that should prevail (if F is less than p, then as usual p is used for establishing the duties to be paid).

Another form of reference price system, that is even more powerful as a protective measure, is the so-called "minimum export price" mechanism. The minimum export price system not only levies the tariff t on the arbitrarily determined minimum price F but also imposes a "moving charge" (F-p) equal to the difference between the minimum export price and the c.i.f. import price p declared by the

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[3]Here we define the reference and minimum export price mechanisms, the two major tools of administered protection in Uruguay.

importer. Thus, under the minimum export price system the domestic price in the importing country would be:

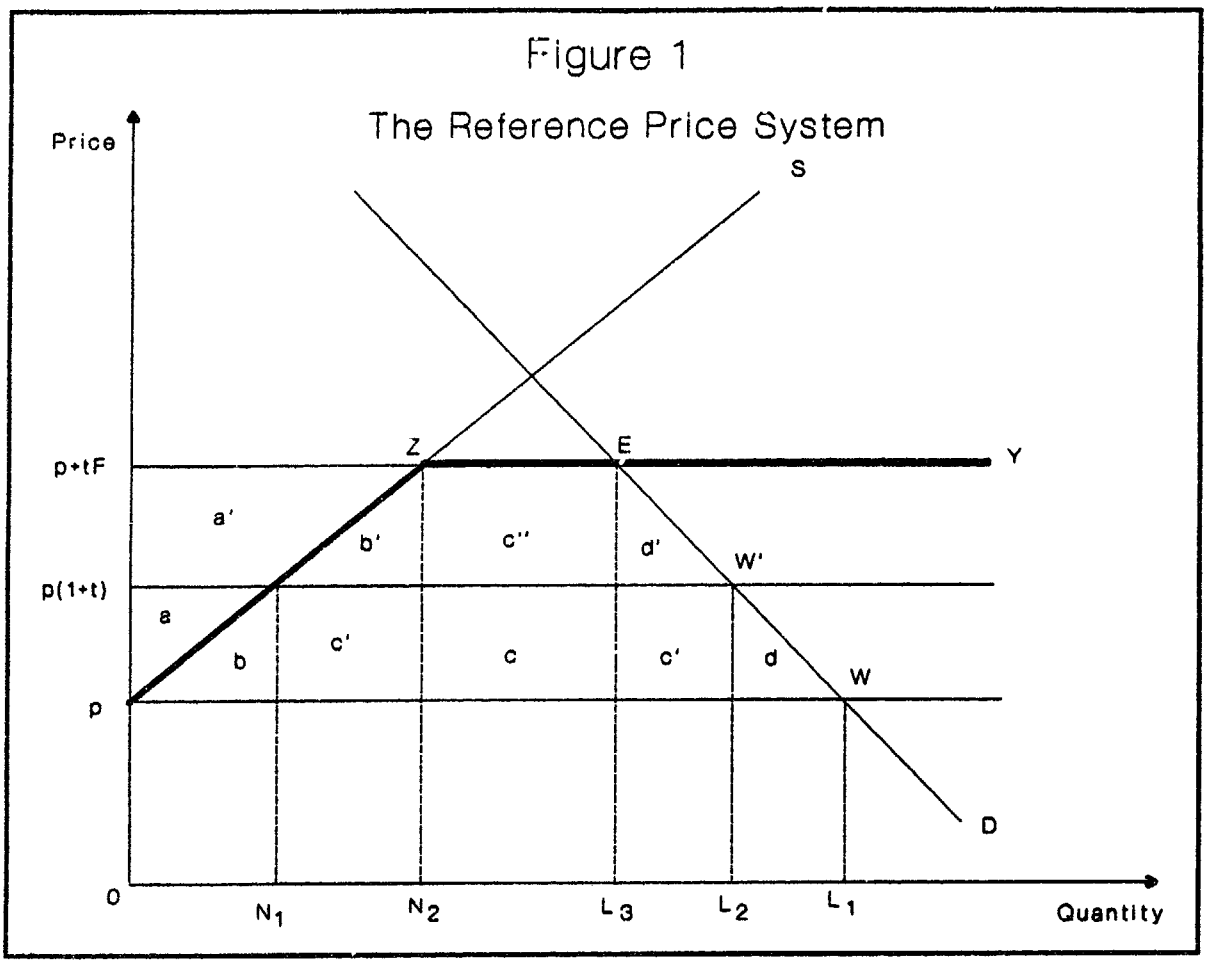
$$[2] \qquad P = p + tF + (F - p) = F(1 + t).$$

Clearly, the MEP is more restrictive than the RP, in that $F > p$ by definition.

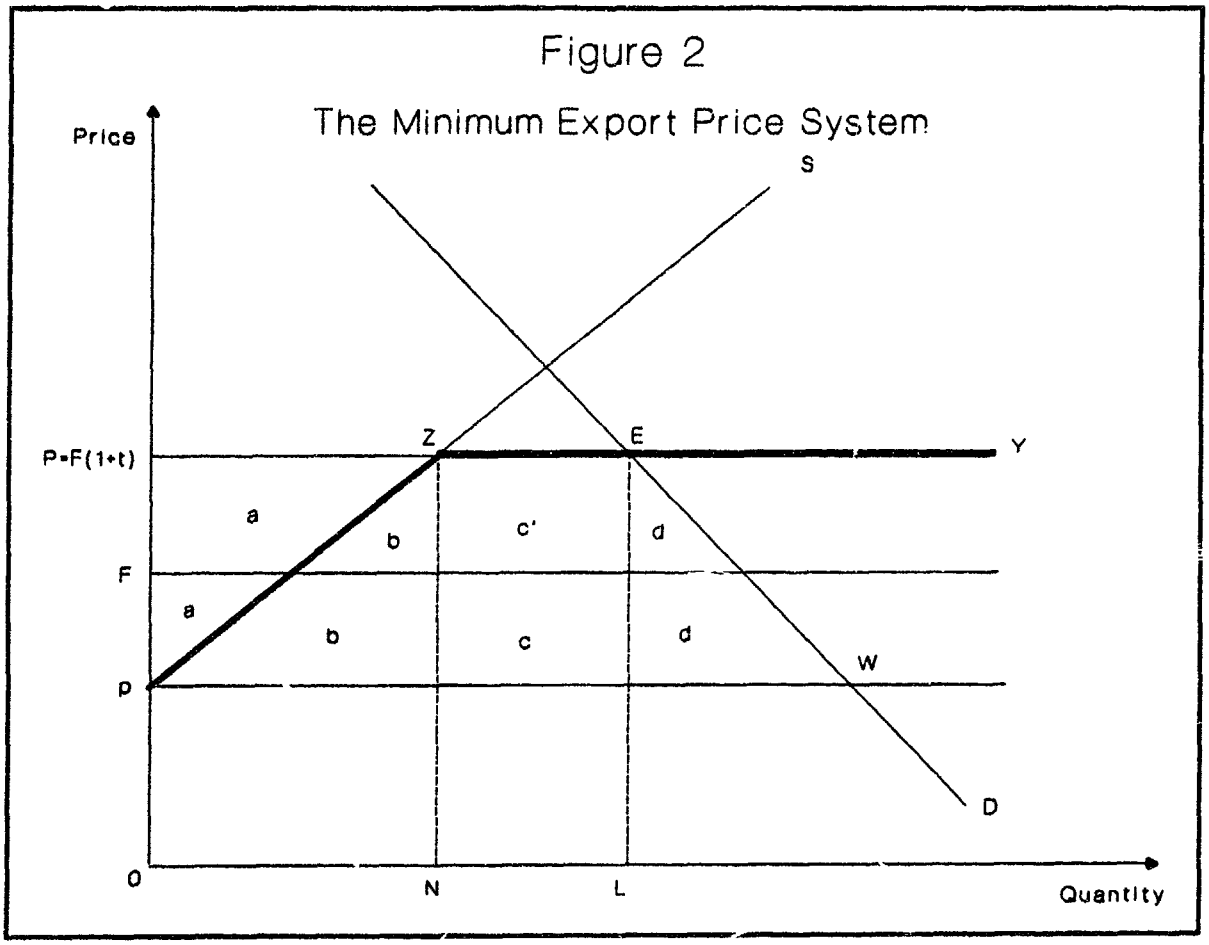
One way to administer these so called reference prices has been to fix them in nominal terms, as in Morocco, and not to increase them later on; in this way the *ad valorem* equivalent protection that such prices offer is eroded over time by foreign inflation. A second way to administer the reference price mechanism has been to use a procedure that allows frequent revisions in the level of the reference prices; this is the approach taken in Uruguay and in various other developing countries.

2.2 Welfare costs of the RP and MEP systems. Assume for now that consumers demand goods and thus ignore the impact of protection on the quality of imports and on the domestic production mix. By increasing the cost of imports, the RP and MEP systems can be shown to generate the usual distortions that one expects from tariff protection: domestic production is diverted from exportables to importables. We first analyze the case of a Reference price system. Figure 1 shows foreign supply (pW), domestic supply (pZS), and domestic demand (D) (for simplicity, only one-quality good is considered.) In a free trade situation, the market would clear at W, with a world price of p and quantity sold equal to OL_1. With the imposition of an ad-valorem tariff t, equilibrium would be attained at W', where the price is $p(1+t)$, and quantity sold is equal to $0L_2$ ($0N_1$ from domestic suppliers and N_1L_2 from foreign suppliers.) As in the usual tariff-only case, the transfers to producers are equal to area a, government tariff revenues are equal to area c+c', and the net effect is a loss to consumers equal to areas b+d. However, the imposition of a reference price (equal to F) generates an effective supply curve of pZY. The market clears at E, where the price is $P = p+tF$, and the quantity sold is OL_3 (ON_2 from domestic suppliers and N_2L_3 from foreign suppliers.) Since the reference price, the augmentation effect, and the duty determine the domestic price, the system severely restricts competition in the domestic market. In this case, we have extra efficiency losses equal to areas b'+d'. In addition, domestic producers gain extra transfers equal to area a', and the government collects extra tariff revenue equal to area c", but at the same time because of the reference price system, the government losses tariff revenue equal to areas c'.

The minimum export price system can be analyzed in a similar fashion. Figure 2 shows foreign supply (pW), domestic supply (pZS), and domestic demand (D). The imposition of a MEP (equal to F) generates an effective supply curve of pZY. The market clears at E, where the price is $P = F(1+t)$, and the quantity sold is OL (ON from domestic suppliers and NL from foreign suppliers.) The quantity sold



by domestic producers is ON, and the rents that they capture equal the sum of areas a. The government collects tariff revenue equal tc areas c+c', that includes the "moving charge" [(F-p) in equation 2] equal to area c. However, these revenues are offset by the welfare loss to consumers equal to area PEWp. The latter includes the higher prices paid for imports equal to the sum of areas c+c', the higher cost of the domestic source of supply equal to area b, and the efficiency loss in consumption equal to area d. Thus, the net effect is indicated by the sum of the areas b and d. In addition, because the Uruguayan price remains unchanged, when the world price falls (curve pW shifts downward), the implicit tariff equivalent of the MEP increases as world suppliers become more efficient.



2.3 **Minimum prices' quality-related impact on imports and domestic specialization**. Assume now that consumers buy goods for the services these goods provide. In such an approach, a crucial element is the actual quality of the goods, which determines the features and longevity of the services provided. In this vein, it is intuitively clear that minimum price procedures have three quality-related effects: 1) they can induce foreign firms to shift exports to the country toward the expensive higher quality varieties; 2) they can induce domestic producers to shift production toward the cheap lower quality varieties; and 3) because these procedures decrease the *relative* price of the expensive varieties, they can induce domestic consumers to reallocate expenditures toward expensive goods. Hence, this system of administered protection has negative distributional effects on the consumption side and also promotes domestic production of low-quality goods.

This section refines these intuitive results and in the process extends the literature on the quality effects of import quotas to cover the quality effects of minimum price procedures. Two main questions are examined. First, what is the impact of the RP and MEP systems on the quality of the goods

imported, particularly when compared with the impact of an *ad valorem* tariff (hereafter tariff) or a quota? Second, what are the consequences of the RP and MEP systems on the product mix of domestic producers competing with foreign producers subject to these procedures?

Foreign firms are likely to react to the RP and MEP procedures by changing the quality content of the goods they export to Uruguay. Following the recent economic literature, one can analyze more precisely the likely changes in the quality content per physical unit imported by considering two alternative market structures:

a. *The competitive case*: The first scenario is that foreign suppliers face competitive markets, a case likely to fit most Uruguayan imports under RP or MEP procedures, whether they are textiles or nontextile goods. Using a model suggested by Rodríguez[4] (1979), one can compare the impact of a tariff and that of a quota on import quality, and one can extend the results to a minimum price system. The basic results are twofold: a tariff does not change the optimal quality content per physical unit of imports, but a quota--and a minimum price as well--induces foreign firms to increase quality content.

Under free trade, foreign exporters determine the optimal quality content per physical unit they export by maximizing (with respect to q, the quality content) their profits [pxq - xh(q)], where p is the price per unit of services, x is the number of physical units produced, and xh(q) is the cost function where h(q) is the constant average (and marginal) cost per unit of physical output. The optimal quality content q_F per physical unit under free trade is thus determined in the long run by

$$[3] \qquad p = h'(q).$$

The absence of entry barriers--zero profits--associated with long-run equilibrium in the competitive market structure implies that in the aggregate

$$[4] \qquad p(S)S = Xh(q),$$

where p(S) is the demand for imports of services, and $S = qX$ [where $X=\Sigma(x)$], the total flow of services provided by the goods. The equilibrium situation is thus determined by

$$[5] \qquad p = h'(q) = h(q)/q,$$

that is, the traditional equality between marginal and average costs. Figures 3a and 3b illustrate the model. Figure 3a shows the optimal quality content q_F with a price per unit of services equal to P_F, and the total imports of services equal to S_F. Figure 3b illustrates the equilibrium situation F for the services market.

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[4]See also Santoni and Van Cott (1980).

Under a tariff, foreign firms maximize their profits defined by the expression [p(1-t)xq - xh(q)], the tariff being defined as imposed in the proportional amount t of the tariff-inclusive price. This yields the optimal quality choice: $p(1-t) = h'(q)$. Under the zero-profit condition, the tariff solution yields $p(1-t) = h(q)/q$, showing that profit-maximizing foreign exporters under a tariff face the same optimization condition $h'(q) = h(q)/q$ as under free trade when they determine the optimal quality content of their products. They thus keep the optimal quality content q_F per physical unit of their exports, which also prevails under free trade. Nevertheless, keeping q_F implies that the price per unit of service under a tariff, P_T, rises in proportion to the tariff up to $P_T = P_F/(1-t)$ in figure 3b. In other words, a tariff does not induce foreign firms to change the optimal quality content per physical unit, but it reduces the total amount of services imported from a level of S_F (under free trade) to S_T and the total volume of imported goods from a level of X_F (under free trade) to X_T.

By contrast, the introduction of a quota creates an incentive for foreign exporters to increase the optimal quality content per physical unit. In order to make a meaningful comparison, the quota to be considered is X_T, as did the *ad valorem* tariff. This constraint is illustrated by the curve $P(qX_T)$, which shows the domestic price per unit of services as the quality content is changed, X_T being given and fixed. If foreign firms would keep q_F , they would be able to charge a price p_F while bearing a cost of $h'(q)_F$ (at the margin). At that level of imports S_t , the domestic price is P_t , with a rent equal to the difference P_t-P_f accruing to quota holders. However, as long as each quota holder regards the domestic price for services as given, it will pay for him to order imports of higher quality content whenever the price is higher than the marginal cost. Foreign firms (suppliers) are thus induced to increase their revenues by choosing a higher quality content, q_Q , such as $p = h'(q)$ for q_Q (at the margin) as shown in Figure 3a. As a result, as shown by the equilibrium point U in Figure 3b, the total imports of services increase up to S_Q, with $S_Q > S_T$.

The introduction of a minimum price, based on a RP or a MEP procedure, leads to a similar quality upgrading reaction by foreign firms. In what follows, a minimum export price mechanisms treated as a specific tariff, r, that is a function of the quality content of the imported good:

$$[6] \qquad r = r(q).$$

For prices up to the MEP, the higher the quality (and therefore unit price) the smaller the difference between the arbitrary minimum export price and the declared c.i.f. import price. It is assumed that $dr/dq < 0$, because the higher the quality, the lower the specific tariff. In such a case, foreign firms determine the optimal quality content by maximizing their profits [pxq - xh(q) - xr(q)]. That gives

$$[3'] \qquad p = h'(q) + r'(q),$$

Figure 3a

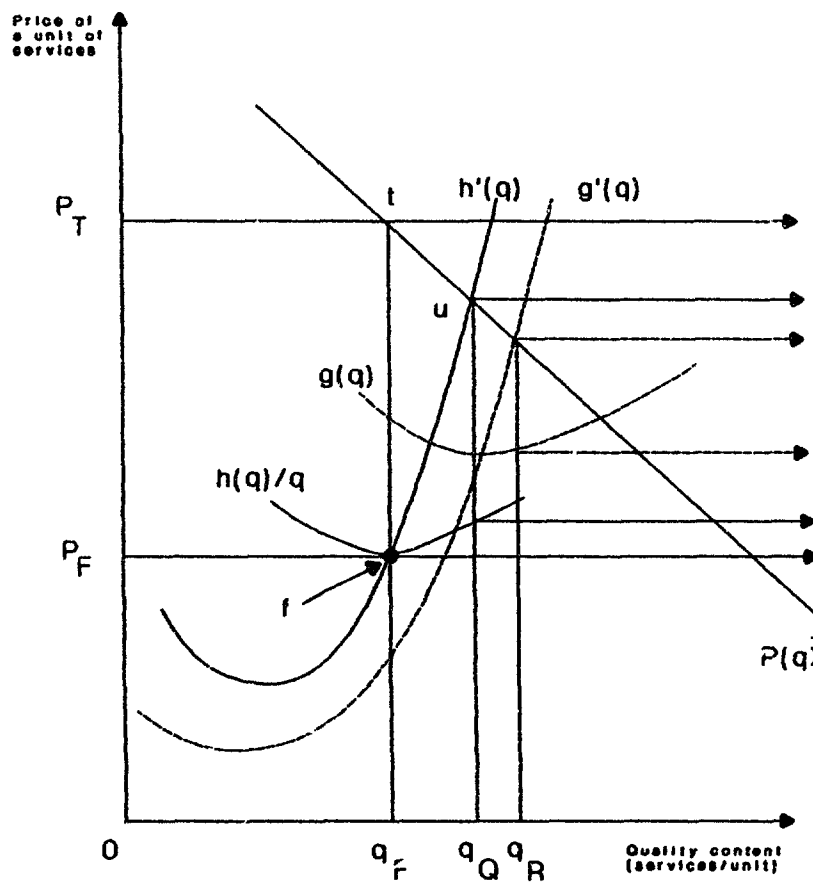
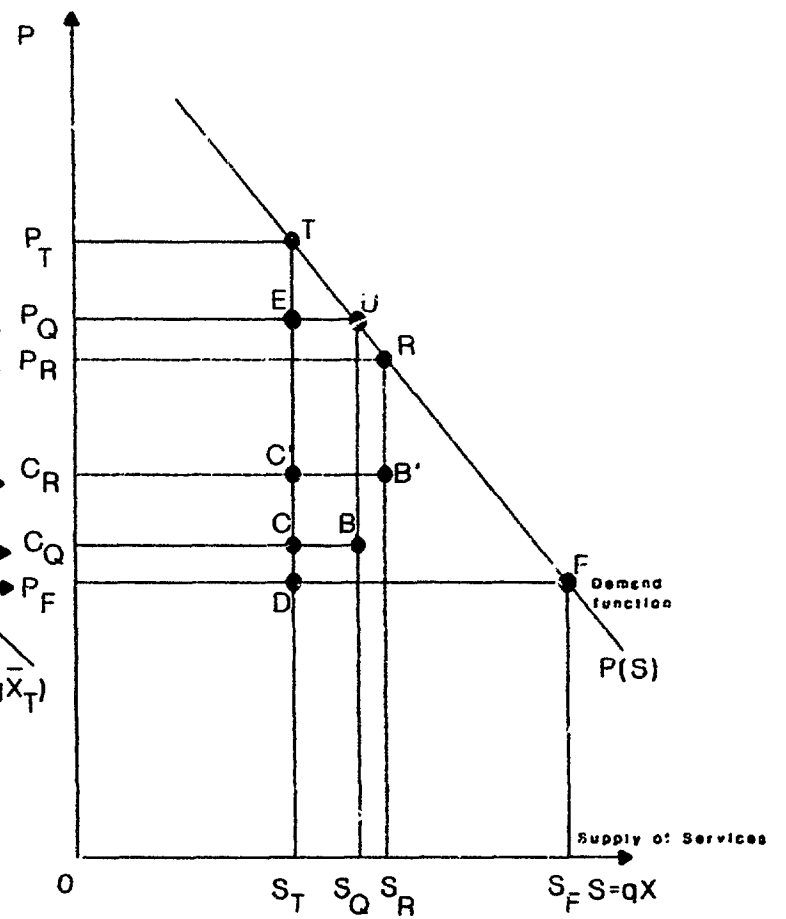


Figure 3b



illustrated by the curve g'(q) in Figure 3a. Meanwhile, the zero-profit condition corresponding to free entry imposes

$$[4'] \qquad p(S) = [h(q) + r(q)]/q,$$

a condition illustrated by the curve g(q) in Figure 3a. As in the quota case, foreign firms are induced to increase their optimal quality content. They will increase it up to q_R, which is higher than q_P and even q_Q. The total flow of services increases up to S_R, with $S_R > S_Q > S_T$. In sum, a minimum price heightens the incentive to increase the quality content of foreign exports.

b. *The non-competitive case*: An alternative scenario is that foreign exporters are monopolists, a case that may be less plausible than the previous one, but one that nevertheless may fit the situation of some Uruguayan imports. A model suggested by Krishna[5] (1987) leads to results quite different from those achieved under competition--that is, a tariff induces the foreign monopolist to change the optimal quality content, and a quota may lead to a lower quality content. After a brief survey of the main results obtained by Krishna, the model is expanded to a minimum price situation.

The foreign monopolist's choice between quantity X and quality q is given by maximizing the profits [XP(X,q) - XC(q)]--that is, by stating the two following optimization conditions:

$$[7] \qquad XP_X(X,q) + P(X,q) - C(q) = 0$$

$$\text{and} \qquad XP_q(X,q) - XC_q(q) = 0.$$

The effect of a quota on quality is obtained by differentiating totally the second first-order condition alone. This gives

$$[8] \qquad dq/dX = -P_{Xq}/(P_{qq} - C_{qq}).$$

The sign of this expression depends on the sign of P_{Xq} (since the denominator is a diagonal element of the Hessian--that is, is negative in order to ensure the second-order conditions for a maximum.) Nevertheless, P_{Xq} may be positive or negative. As shown by Spence (1976, p. 419), Pxq is negative when "the marginal value of quality falls as absolute willingness to pay falls, that is, when the average value attached to quality exceeds the marginal consumer's valuation." As a result, a quota can induce the foreign monopolist to decrease--not increase--the optimal quality content of the goods exported.

The minimum price case can be easily introduced in the Krishna's model by restating the profit function as [XP(X,q) - XC(q) - Xr(q)]. The new first-order conditions for a maximum profit are

$$[7a] \qquad XP_X(X,q) + P(X,q) - C(q) - r(q) = 0$$

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[5]See also Das and Donnenfeld, 1987.

and $\quad XP_q(X,q) - XC_q(q) - Xr_q(q) = 0.$

The foreign monopolist can react in three ways. It can either change the optimal quality content taking the quantity as constant, or it can change the optimal quantity produced taking quality as constant, or it can change both the optimal quantity and quality produced. As one wants to compare the quality effects of the two trade measures, it is more appropriate to consider the same level of restrictions in terms of physical units, that is, to focus on the first approach. The corresponding comparative statics require the differentiation of the second first-order condition and give

$$[8a] \qquad dq/dX = -P_{Xq}/(P_{qq} - C_{qq} - r_{qq}).$$

The sign of dq/dX is the same as in equation [8]. Nevertheless, the value of dq/dx in equation [8a] can be higher or lower than in equation [8] since it depends upon the sign of r_{qq}. As a result, a minimum price can induce the foreign monopolist to amplify or reduce the changes in quality content with respect to the changes undertaken under a quota.

c. *The welfare effects*: The Rodríguez and the Krishna models lead to different results in terms of optimal quality content. Nevertheless, both models come to a similar--and unusual--result when they examine the welfare impact of the tariff or the quota. In many cases (and in all cases in the Rodríguez model), a quota is shown *unambiguously superior* to a tariff. This is an unusual result since the traditional trade literature generally suggests the welfare superiority of a tariff over a quota. After presenting this result--and expanding it to the minimum price case--we shall examine its validity. The two types of models will be shown to have limitations that do not make this unusual result robust. In the interest of brevity, the presentation and discussion will focus on the Rodríguez model, because it offers a more plausible framework for the Uruguayan economy (and because it leads to more striking results.)

The Rodríguez model's proof of the unambiguous welfare-related superiority of a quota over a tariff is as follows. A quota is welfare improving relative to a tariff because a quota increases the optimal quality content per unit ($q_Q > q_T = q_F$), and it therefore allows an overall quality level of imported services higher than the quality level allowed by a tariff, *for the same amount of physical units*. The welfare gain is illustrated by the area TUBC in Figure 3b. In customs unions terminology, there is thus a "trade creation" gain, of which TUE accrues to domestic consumers and EUBC to import quota holders. Nevertheless, this service quality expansion generated by a quota imposes additional costs (relative to those in the tariff case), because a higher quality content requires a higher unit cost of

production. This welfare loss is illustrated by the area CDP_FC_Q in Figure 3b. Rodríguez shows that the net welfare gain [TUBC - CDP_FC_Q] is equal to the area tuf in Figure 3a, and is thus positive.

The same analysis can be applied to the minimum price case. A minimum price is said to be welfare improving (that is, less costly), relative to a tariff and a quota, in that it expands the services provided by the same amount of goods (as shown by TRB'C') and is welfare deteriorating by requiring additional costs (as illustrated by $C'DP_FC_R$.)

How robust are these unusual results? They depend in both models on one crucial assumption: that there will occur no reaction by the domestic firms[6]. When comparing the free trade and tariff cases in the Rodríguez model, for instance, this assumption is without consequence, because foreign firms keep the same optimal quality content in both cases (this is not always true for the Krishna model); as a result, domestic firms have no incentives to modify the quality content of their own production sold in domestic markets. But the same assumption creates a bias when comparing the free trade and tariff cases on the one hand and the quota and minimum price case on the other hand. Domestic firms have incentives to modify their optimal quality content if foreign firms have decided to change their own optimal quality content. That domestic firms will face stronger competition in the market niches with a high quality content implie adjustment costs for the domestic firms. These adjustment costs should be added to the welfare costs of the quota or reference price, when comparing these two cases with the free trade and tariff cases.

In sum, administered protection, through the distortion effect analyzed above, may be a serious obstacle to the "correct" or optimal pattern of specialization. It may either induce local producers to produce in too low a range of quality (a situation that fits well the Rodriguez or Krishna models) with respect to their capacities determined by the country's comparative advantage, or it may induce local firms to produce in too high a quality niche (a situation more in line with the Das and Donnenfeld model) with respect to the country's comparative advantage.

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[6]As mentioned by Krishna, another important limitation of these models is that they consider one good, not a product line. For an analysis of a product line, see Krishna (1984). Reactions by domestic firms to foreign firms' decisions can be dealt with through game theory. Das and Donnenfeld (1989) provide such an analysis within a duopolistic market structure. Their main result is that trade instrument's impact on the firms' decisions depends on the location of the firms in the quality spectrum. In the case where foreign firms produce the high-quality variety, the domestic firm responds by upgrading quality and expanding sales, but the total quantity sold to domestic consumers declines. The global impact on welfare is thus ambiguous, because the negative impact on the consumer surplus--dominated by the losses in the high-quality niche--is compensated to some degree by the increase in the profits of the domestic monopoly.

3. Estimates of the Extra Protection Provided by the Minimum Price Systems in Uruguay

In Uruguay in 1981, the government decided to balance its liberalization policies by introducing an antidumping and antisubsidy law based on GATT rules. GATT permits the imposition of antidumping or countervailing duties when any import affected by unfair trading practices causes actual or potential damage to domestic production activities. The difficulties that emerged from the formal procedures as well as the possible threat of retaliation by other countries soon, however, led the Uruguayan government to implement other instruments that could be more effective and allow a quicker response. First, the reference price (RP) system that had already existed as an instrument against underinvoicing of imports began to be used to counter dumping and subsidies. Then, in early 1983, a new and much more powerful instrument was created: the minimum export price (MEP). These instruments are the major tools of administered protection in Uruguay.

3.1 Coverage. Table 1 presents the coverage of RP and MEP protection in Uruguay in terms of the number of general non-textile products, and in terms of the number of specialized textile tariff position/items defined at the eight-digit level of the NADI classification in the case of textiles. Although measures can be revised at any point during the year, Table 1 presents the coverage of the measures on an overall yearly basis. Uruguayan administered protection covers roughly 500 products and tariff positions. It is interesting to compare this figure with the total number of antidumping actions undertaken by industrial countries during the same period, which was roughly 200 antidumping actions on the part of the United States or the European Economic Community during the same period. This proportion suggests that administered protection in Uruguay is intensive by world standards. Although a more precise comparison would take into account the size of the import flows involved and the degree of openness of the domestic economies, there is little doubt that even then, administered protection by Uruguay would still be seen as broad by world standards. Changes in coverage during the 1981-1989 period differ according to the type of good involved. For nontextile products, the overall decline in the number of cases of administered prices after 1985 has been accompanied by a marked shift from the RP system to the MEP system. Textile items were subject to a much more stable system of reference prices until 1987. Since then, there has been an apparent move to reduce coverage.

An alternative measure of the coverage of administered protection is the percentage of imports under the RP or MEP systems. By this standard, goods under RP or MEP actions represented roughly 4 percent of total Uruguayan imports (oil excluded) in 1987 and 5 percent in 1989. With either measure, one should always bear in mind that domestic goods under RP or MEP protection systems already benefit from higher protection than do goods that do not enjoy the additional protection of one of the two

Table 1. The Scope of the Administered Protection in Uruguay: 1981-1989

Stock of measures	1981	1982	1983	1984	1985	1986	1987	1988	1989
	A: Number of general products covered other than textiles								
Reference prices	8	34	70	95	89	70	62	54	54
Minimum export prices				12	18	20	25	40	40
"Transferred" goods [a]	22	46	46	47	47	46	36	35	35
Subtotal	30	80	116	154	154	136	123	129	129
	B: Textile and apparel categories covered [b]								
Yarns	177	177	177	177	177	177	177	177	177
Fabrics	105	105	105	105	105	105	105	105	105
Other textiles	129	129	129	129	129	129	129	104	82
Subtotal	411	411	411	411	411	411	411	386	364
All products/items	441	491	527	565	565	547	534	515	493

Source: CERES, 1989

Note: [a] Goods initially under reference price and progressively transferred to the minimum export price system.
[b] Number of NADI items under the RP/MEP system.

systems. In other words, the apparently low coverage mirrors the extra protection granted to domestic goods under RP or MEP which introduces a systematic bias underestimating the importance of these mechanisms. The base level apparent tariff for the sample of goods under the RP and MEP systems examined in this section varies from 50 percent to 58 percent on average for 1986, and from 39 percent to 45 percent on average for 1989. That is higher than the 29 percent average apparent tariff imposed on all goods imported by Uruguay in 1986[7]. As a result, the measurement of administered protection based on the number or percentage of affected imports underestimates the real impact of reference price

[7]As of April 1989, nominal tariffs in Uruguay ranged from 0 percent to 45 percent.

systems on Uruguayan trade. A better indicator would be for example, that the value of textiles and apparel products covered by RPs equals one- third of total Uruguay's value added in manufactured goods.

3.2 Measurement of the extra protection provided by the RP and MEP systems in Uruguay. The costs of administered protection enforced in Uruguay at a time that Uruguay was undertaking trade liberalization can be disaggregated into three main components. First, the RP and MEP systems augment or magnify the tariff protection against selected imports. Second, the systems erode the trade liberalization policy implemented during recent years. Third, the systems tend to distort the relative prices of cheap and expensive imports of the same item. Table 2 presents the findings that support these conclusions.

a. The protection augmentation effect. The RP and MEP systems magnify the impact of the nominal tariffs faced by imports with prices lower than the floor prices. This effect is likely to be substantial in that administered protection affects goods that already face relatively high nominal tariffs of 50 percent to 58 percent in 1986, 45 percent in 1987, 44 to 45 percent in 1988, and 37 percent to 39 percent in 1989 for the sample of nontextile goods examined here--or more than one-third of all the nontextile items involved in administered protection. The true tariffs faced by cheap imports are thus likely to be high.

In the case of the RP mechanism, the real tariff is derived from equation [1] above by dividing and multiplying tF by p:

$$[1'] \qquad P = p(1 + t\alpha),$$

where $\alpha = F/p$ measures the protection augmentation effect introduced by the reference price mechanism. Data made available by the Central Bank of Uruguay allow us to distinguish between transactions cleared at prices below the floor price and transactions cleared at prices above the floor price. The average prices of the two types of transactions have been computed for each item. Dividing the floor price by the average price of the transactions cleared at prices lower than the floor price for each item gives the augmentation coefficient α, which enables the real tariff $t\alpha$ to be computed.[8] The average true tariffs based on these computations are higher than the average apparent tariffs by 28.9, 27.6, 24.9, and 18.1

[8]The method of averaging prices for the two types of transactions has the advantage of avoiding the risk of overestimating protection by focusing on the transactions with the lowest prices. Indeed, the price differentials between the two types of transactions are a multiple of 2 and 3, a "normal" figure by any standard.

percentage points for 1986, 1987, 1988, and 1989. Real tariffs of more than 80 percent are not rare, and some goods have real tariffs of 150 percent or more.[9]

For the MEP mechanism, real tariffs are obtained by computing [F(1 + t)/p], where p is the average price (before protection) of the transactions cleared at prices lower than the corresponding floor price. Table 2 shows that the real tariffs introduced by the MEP mechanism are smaller than those introduced by the RP system, although still substantial: 20.4, 4.1, 7.6, and 7.5 percentage points for 1986, 1987, 1988, and 1989 respectively.

These latter results deserve careful examination, because they seem to contradict the finding that the MEP system is more protectionist than the RP system. The apparent contradiction arises because of the differing coverage of the two systems. Nevertheless, by rewriting equation [2], it is easy to show that shifting products from the RP to the MEP system generates an increase in the protection granted:

$$[2'] \qquad P = p + tF + (F - p) = p(1 + t\alpha + (F - p)/p).$$

This expression shows that, all else being equal, real protection provided by the MEP system is larger than with the RP system by the difference between the floor price and the import price as a percentage of the import price, (F-p)/p. As a result, simply transferring a good from the RP systeto the MEP system leads to an increase in protection since $F>p$ for goods covered by the system. Nevertheless, this result holds only when the apparent tariff, the transaction price, and the floor price are constant.

Table 2 shows that one of these conditions is not likely to be met. Transaction prices will not be constant, because the MEP system reduces--to a much greater extent than does the RP system--the incentives to foreign exporters to keep their prices lower than the floor price. Under the RP system, foreign exporters can compensate for the augmentation effect with lower c.i.f. prices. Under the MEP system, foreign exporters offering prices lower than the floor price cannot gain any advantage by maintaining these low prices, because the sale prices of their products on the Uruguayan markets will be determined by floor prices and apparent tariffs, two variables over which they have no control. In such circumstances, the lowest prices that foreign exporters will be induced to offer are close to the floor prices. They thus keep for themselves the price difference they would have been ready to offer in the

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[9]For television sets or "transmisores" several reference prices were applied. The result mentioned above is based on the lowest reference price. Thus, there is not an overestimation of the augmentation effect, but a possible underestimation.

Table 2. Protection Augmentation, Liberalization Erosion, and Price Distortion Effects under the Reference and the Minimum Export Price Systems (selected items, 1986-1989)

Type of Protection and Year	THE PROTECTION AUGMENTATION EFFECT			THE EROSION OF LIBERALIZATION EFFECT					THE PRICE DISTORTION EFFECT		
	Transactions below floor prices			Evolution of the tariffs [f]					changes in the relative unit value [e]		
	Apparent	Real	Differences	Apparent	Global Tariff		Global Tariff		Before RP	After RP	
	tariff [b]	tariff [c]	[d]	tariff [b]	Weighted	Change [g]	unweighted	Change [g]	or MEP	or MEP	Changes [e]
REFERENCE PRICE SYSTEM	%	%	%	%	%	%	%	%	ratio	ratio	%
1986	48.9	77.8	28.9	57.9	68.5	18.3	69.4	19.9	2.73	1.65	39.6
1987	44.1	71.7	27.6	45.0	54.3	20.7	54.5	21.1	3.18	1.80	43.4
1988	42.1	67.0	24.9	43.8	51.3	17.1	54.8	25.1	2.93	2.03	30.7
1989	38.5	56.6	18.1	39.4	46.9	19.0	44.8	13.7	1.84	1.44	21.7
MINIMUM EXPORT PRICE SYSTEM	%	%	%	%	%		%		ratio	ratio	%
1986	47.9	68.3	20.4	50.0	63.2	26.4	61.6	23.2	2.31	1.98	14.3
1987	45.0	49.1	4.1	45.0	47.4	5.3	47.1	4.7	1.77	1.59	10.2
1988	38.1	45.7	7.6	45.0	47.3	5.1	47.6	5.8	2.65	2.11	20.4
1989	36.4	43.9	7.5	36.7	38.5	4.9	40.1	9.3	2.02	1.75	13.4
REFERENCE PRICE PROTECTION FOR TEXTILES IN 1989											
	%	%	%								
yarn	40.0	47.1	7.1						ratio	ratio	%
fabric	40.0	55.9	15.9						1.71	1.43	16.4
others	40.0	64.7	24.7						2.43	1.75	28.0
all textiles	40.0	58.3	18.3						3.23	2.13	34.1

Source: Central Bank of Uruguay. Notes: For definitions of the price effects, see text.
[a] Ratio of average prices of transactions with prices above the RP or MEP to transactions with prices below the RP or MEP.
[b] Unweighted average of the apparent tariffs imposed on the selected products.
[c] Unweighted average of the "real" tariffs (after the RP or MEP systems).
[d] Difference (c)-(b) in percentage.
[e] Reduction (in %) of the relative unit values due to the RP or MEP systems.
[f] For definitions, see text.
[g] Percentage increase of global tariff over the apparent tariff.

form of a lower import price or share the difference with the Uruguayan importer or user illegally (who may be a producer.)

The average augmentation coefficient of all items under RP (1.51) is 31 percent higher than the corresponding coefficient for all the items under MEP (1.15). Moreover, until 1988, the items under MEP show that the augmentation coefficients actually decreased while the floor prices increased. This evolution suggests a quick "learning" process by foreign exporters, especially since the floor price for the same items increased (a trend that suggests larger rather than smaller augmentation coefficients.)

Finally, the results suggest that the augmentation effect is relatively evenly distributed among industries, with no obvious pattern of concentration of augmentation effect by industry.

b. The liberalization erosion effect. In 1986, by lowering apparent tariffs, the Uruguayan authorities resumed the policy of trade liberalization that had been suspended in 1982. As the effects just examined suggest, however, liberalization measures are likely to have been eroded by the administered protection based on the RP and MEP systems.

Table 2 supports this liberalization erosion hypothesis. The averages of three different types of tariffs--apparent, global real unweighted, and global real weighted--were computed for items with at least two consecutive years of imports. Global real tariffs are defined as the averages of the apparent tariff for items on which transactions take place above the RP or MEP and of the real tariffs on goods whose transactions take place below the RP or MEP. The weights are the market shares of the transactions. The trade liberalization policy is reflected in the evolution of apparent tariffs. For goods under RP, the average apparent tariff decreased from 58 percent in 1986 to 38 percent in 1989, and for goods under MEP the average apparent tariff decreased from 50 percent in 1986 to 37 percent in 1989. For both cases, however, global weighted real tariffs are 19 percent (RP) and 5 percent (MEP) higher in 1989 than the corresponding apparent tariffs, indicating a substantial net erosion of trade liberalization.[10]

c. The price distortion effect. Let us assume that all the transactions below the floor price imposed by the Uruguayan authorities are dealing with a homogeneous "cheap variety" of the product imported and that all the transactions above the floor price are dealing with a homogeneous "expensive variety" of the product imported. In such a two-quality world, the RP and MEP procedures introduce

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[10]It is interesting to note that there is no sign of catching up in the RP system in the sense that the differentials between the apparent and global tariffs are stable over time. That is not the case in the MEP system. This result may again be caused, however, by the pricing behavior the MEP system triggers among foreign suppliers.

a "distortion" effect between the relative prices of the two qualities. That is, they make the cheap imported variety relatively more expensive to consumers vis-á-vis the expensive variety.

Table 2 provides a rough estimate of the likely extent of this distortion effect. The first column shows the relative prices (unit values) of the cheap and expensive varieties of imports before protection (that is, before tariff plus RP or MEP.) The second column shows the relative prices after protection. Both columns present the annual averages of these relative prices computed for all the goods for which there were available transactions. The third column shows the reductions (annual averages for all goods) in the relative prices between the two previous columns. These reductions give an estimate of the price distortion effect attributable to administered protection. The distortion effect is substantial. During the whole period 1986-1989, the average reductions in relative prices amount to 34 percent for the goods under the RP system, 15 percent for the products under the MEP procedure, and 27 percent for textiles. That the distortion effects appear lower in the MEP system than in the RP system is likely to be a consequence of the pricing behavior--the fact that firms operating under the MEP system are induced to stick to the floor prices in order to get the maximum rents, as explained earlier--that the MEP system generates among foreign exporters. As a result, the distortion effect is likely to be underestimated in the case of the MEP mechanism.

3.3 The effects of minimum prices upon Uruguayan textiles producers. The case of textiles (which here also includes apparel) is particularly important for two reasons. Under the RP system, textiles represent a substantial percentage (roughly 33 percent in 1983) of Uruguayan value added in manufactured goods. Moreover, textiles are subject to a particularly complex form of reference price mechanism; reference prices for yarns are determined in the same way as reference prices for nontextile goods, whereas reference prices for fabrics and apparel are based on reference prices imposed on the previous stages of production, with *ad hoc* multiplicative coefficients.

Our analysis shows that, in terms of protection augmentation and price distortion effects, the reference price system has a more severe impact on textiles than on the nontextile sector (Table 2). The protection augmentation effect is larger for all textile products than for nontextile products--roughly 18.3 percent versus 18.1 percent under the RP system and 7.5 percent versus 7.1 percent under the MEP system for 1989. More importantly for assessing its impact on Uruguay's domestic textile industry, the protection augmentation effect clearly reveals the existence of escalation of protection--that is, effective protection rises with the degree of processing. The augmentation effect averages 7 percent for yarns, 16 percent for fabrics, and 25 percent for the rest of the textile products considered. The protection

augmentation effect provides crucial information on the relative share of the tariff and of administered prices in the protection granted to Uruguayan producers. The fact that the apparent tariff is 40 percent for all textile goods studied means that escalation is entirely the result of administered protection, making the latter a substantial source of uncertainty and confusion for Uruguayan producers.

The third effect--price distortion-- also exists for textiles. Again, it is more severe for textiles than for nontextile goods: 30.5 percent versus 21.7 percent or 13.4 percent. The price distortion effect also exhibits an escalating character: from 16 percent in yarns to 28 percent and 34 percent in fabrics and the rest of textile goods. That the distortion effect is more severe for textiles than for nontextile goods is a finding of great importance for a developing country, where a substantial proportion of personal income is devoted to buying textiles and apparel.

3.4 Argentine and Brazilian imports not valid rationale. The RP and MEP systems are often presented as essential for reducing the trade-borne negative impact in the Uruguayan economy of macroeconomic disturbances in Argentina and Brazil. This suggestion that the two systems would primarily be applied to imports from Argentina and Brazil is not supported by available evidence, which suggests that the RP and MEP systems are as effective against imports from the rest of the world (all trade partners of Uruguay excluding Argentina and Brazil) as they are against imports from Argentina and Brazil.[11]

First, administered protection is triggered in a substantial number of cases by exports from the rest of the world. Of the 88 nontextile products under the RP and MEP systems, 43 have transactions under the floor price only for exports from Argentina and Brazil, 13 for exports coming only from the rest of the world, and 32 for exports coming from both sources. So for only 48.3 percent of products are the RP and MEP systems triggered exclusively by exports from Argentina and Brazil, a proportion that corresponds roughly to the relative importance of trade flows from the two sources (e.g., 38.6 percent of total Uruguayan imports were from Argentina and Brazil and 52.4 percent from the rest of the world in 1986.) Second, the economic impact of the RP and MEP system is similar for exports coming from Argentina and Brazil and for exports coming from the rest of the world. This is shown by the protection augmentation effect, which on the average is similar for exports from Argentina and Brazil and for exports from the rest of the world (see Table 3). When one considers all products, irrespective of

[11]In what follows, only nontextile goods have been taken into account. Textile goods are subject to "indirect" imports when Uruguayans purchase these goods in Argentina and Brazil. That these indirect imports are generally considered to be significant (although there is no estimate) implies that the computations done in Table 3 would be upward biased in the case of textiles.

the country sources with transactions under the floor prices, the protection augmentation effect for the rest of the world is slightly higher than the corresponding effect for Argentina and Brazil, except for the MEP system in 1986. But when one considers only the goods in which Argentina and Brazil or the rest of the world have transactions below the floor prices, the augmentation effect for goods in which all transactions under the floor prices come from the rest of the world is systematically higher than the corresponding augmentation effect for the transactions in which all transactions under the floor price come from Argentina or Brazil. When one considers the MEP system alone, the impact on imports from the rest of the world is unambiguously more severe than the impact on imports from Argentina and Brazil. This apparently paradoxical result is explained by the fact that Argentine and Brazilian exporters are more aware of the loopholes of the Uruguayan MEP system--that is, its capacity to generate price alignments and rents--than are exporters from the rest of the world.

Table 3. Uruguay's Use of Reference Prices on Selected Imports from Argentina and Brazil versus the Rest of The World 1986-1989

TYPE OF PROTECTION AND YEAR	ALL PRODUCTS				"COMMON" PRODUCTS [a]		
	All trade partners	Argentina and Brazil	Rest of the World [b]		All trade partners	Argentina and Brazil	Rest of the World [b]
REFERENCE PRICE SYSTEM							
1986	1.63	1.37	1.84		1.50	1.42	1.60
1987	1.62	1.53	1.57		1.75	1.61	1.57
1988	1.51	1.38	1.68		1.37	1.36	1.60
1989	1.46	1.34	1.40		1.39	1.32	1.44
Average	1.56	1.41	1.62		1.50	1.43	1.55
MINIMUM EXPORT PRICE SYSTEM							
1986	1.13	1.15	1.12		1.28	1.21	1.22
1987	1.09	1.09	1.34		1.11	1.09	1.47
1988	1.22	1.19	1.48		1.12	1.15	1.42
1989	1.19	1.20	1.46		1.17	1.19	1.49
Average	1.16	1.16	1.35		1.17	1.16	1.40
GLOBAL AVERAGE	1.36	1.28	1.49		1.34	1.29	1.48

Source: Central Bank of Uruguay

Notes : [a] Products are "common" where imports are coming from both sources, that is Argentina-Brazil and the "rest of the world."

[b] The "rest of the world" is defined as all trade partners of Uruguay, excluding Argentina and Brazil.

4. Conclusions

By increasing the costs of imports, minimum prices generate the usual distortions that one expects from tariff protection, but in an augmented way. Protection through the use of minimum prices creates some additional negative effects, however, that a pure tariff system would not generate. If the quality of the goods is taken into consideration, minimum prices distort the quality content of imports and domestic production and exports. In a perfect competition setting, we showed that while a tariff does not change the optimal quality content per physical unit of imports, a minimum price- and a quota as well- lead to a quality upgrading reaction by foreign firms. In a non-competitive setting, the impact of minimum prices on quality is ambiguous, because a minimum price can induce the foreign monopolist to amplify or reduce the changes in quality content with respect to the changes undertaken under a quota. In addition, further research should assess the impact of minimum prices on the quality content chosen by domestic producers that face stronger competition from foreign firms upgrading their own optimal quality content. Nevertheless, it seems plausible that for many developing countries the quality upgrading effect may actually become negative, because the upgrade may generate additional adjustments costs related to the existing comparative advantage of the country.

In the Uruguayan case study, we showed that reference and minimum export price procedures impose floor prices on imports covering a wide proportion (roughly more than one-third) of Uruguayan value added in manufacturing. Overall, for goods covered, the MEP system boosts published tariffs rates by 7 percent (a figure likely to be an underestimate) and the RP system boosts them by 18 percent. These systems jeopardize trade liberalization efforts by giving the impression that tariff cuts are greater than they in fact are. These systems also create massive distortions (from 15 percent to 30 percent) between the relative domestic prices of the goods imported under and above the floor prices.

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